



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/666,902	09/20/2000	Siu-Wai Wu	GIC-607	8313
7590	03/29/2004			
Barry R Lipsitz Attorney at Law 755 Main Street Bldg 8 Monroe, CT 06468			EXAMINER CZEKAJ, DAVID J	
			ART UNIT 2613	PAPER NUMBER 5

DATE MAILED: 03/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/666,902

Applicant(s)

WU, SIU-WAI

Examiner

Dave Czekaj

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 September 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2.4.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozkan (5838686) in view of Rostoker et al. (5446726), (hereinafter referred to as "Rostoker") in further view of Wang et al. (6167084), (hereinafter referred to as "Wang").

Regarding claims 1, 4-5, 10, 17, 22, and 24, Ozkan discloses an apparatus for allocating a scarce resource among several users in response to indications of need from the users (Ozkan: column 1, lines 3-5). This apparatus comprises "capturing a sample of data from each channel" (Ozkan: figure 2, wherein the sample of data is sent to the complexity analyzer), "obtaining a measure of complexity for each channel based on its sample" (Ozkan: figure 2, column 4, lines 29-30, wherein the sample is the video signal), "assigning each channel to at least one of the processors for processing thereof" (Ozkan: figure 1, wherein it is shown that each channel has a separate processor), and "maintaining a running balance of an accumulated complexity for each processor according to the complexity of the channels assigned thereto" (Ozkan: column 4, lines 1-8, wherein the processors output a complexity level and the bit rate allocator collects or accumulates them for use in calculations). However, this

apparatus lacks assigning channels based on complexity and the processors being transcoders as claimed. Rostoker teaches that channel priority algorithms can be supported in firmware, which one of ordinary skill would realize that firmware is more easily updatable than hardware (Rostoker: column 28, lines 53-55). Rostoker further discloses a channel priority algorithm that "assigns channels with high complexity before channels with low complexity" (Rostoker: column 28, lines 25-40, wherein the complexity is the channel priority). Wang teaches that in order to accommodate pre-compressed program bit streams in a stat mux system, the corresponding rates have to be changeable which is attainable using a transcoder (Wang: column 6, lines 43-49). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to take the apparatus disclosed by Ozkan, add the channel priority scheme taught by Rostoker, and add the transcoders taught by Wang in order to obtain an apparatus that can handle both constant and variable bit rates and have channel priority algorithms that can be easily updated.

Regarding claims 2-3, 20, and 23, although not disclosed, it would have been obvious to implement a channel assignment scheme where processors with the least accumulated complexity or resolution or least portion of utilization receive the next channel (Official Notice). Doing so would have been obvious in order to make the processors more efficient.

Regarding claims 6-9, Ozkan in view of Rostoker in further view of Wang differ from claims 6-9 in that claims 6-9 further require measures of complexity

being functions of GOP structure, pixel resolution, frame rate, and macroblock rate. Kaye et al. (6259733), (hereinafter referred to as "Kaye"), teaches that bit rate needs for specific types of video scenes may not be considered using the convention techniques of statistical multiplexing (Kaye: column 1, lines 11-34). Kaye discloses that the measure of complexity is a function of "GOP structure, pixel resolution, frame rate, and average macroblock rate" (Kaye: figure 2, column 5, lines 10-15, wherein the bit rate demand is the complexity, the GOP structure is the length of GOP, the pixel resolution is contained in the image size, and the average macroblock rate is part of the scene change detect, length of GOP, and quantization step size). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to take the apparatus disclosed by Ozkan, add the channel priority scheme taught by Rostoker, add the transcoders taught by Wang, and add the complexity measuring taught by Kaye in order to obtain an apparatus that can handle many types of video encoded at different rates and have channel priority algorithms that can be easily updated.

Regarding claim 11, Wang discloses that the "measure of complexity has a first constant bit rate and a second different constant bit rate and is a function of a difference between the first and second bit rates" (Wang: column 14, equation 17, wherein the first bit rate is $R_{i,n,t}$ and the second bit rate is $R_{\text{channel}(bpf)}$).

Regarding claim 12, Wang discloses that the “measure of complexity for each sample is a function of a ratio of a number of B-frames to a number of P and I-frames” (Wang: column 13, lines 37-60, wherein the complexity has already been calculated for the I, P, and B frames, i.e. $C_{i,n,t}$, wherein t is the picture type (I, P, or B)).

Regarding claim 13, Ozkan discloses that the “running balance of accumulated complexity for each processor is incremented by the complexity of the channels assigned” (Ozkan: column 4, lines 1-8, wherein the processors output a complexity level and the bit rate allocator collects or accumulates them. When more channels are assigned, more processors are used, and the accumulated complexity will be incremented for each additional processor used).

Regarding claims 14 and 21, Ozkan discloses “preventing the assignment of a respective one of the channels to a respective processor if such an assignment will result in overloading the processor” (Ozkan: column 12, lines 15-18, wherein the bits are shuffled from channel to channel so the processor will never become overloaded).

Regarding claim 15, Ozkan in view of Rostoker in further view of Wang differs from claim 15 in that claim 15 further requires having at least one particular channel require more than one processor. Rackman (5614955) teaches that sometimes encoders require additional help or bit capacity (Rackman: column 2, lines 33-35). Rackman discloses an apparatus the supplies this extra bit capacity by supplying half the bits on an auxiliary channel

and the other half divided up among many processors (Rackman: column 2, lines 54-59, wherein the processors are the encoders). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to take the apparatus disclosed by Ozkan, add the channel priority scheme taught by Rostoker, add the transcoders taught by Wang, and add the additional bit capacity in order to obtain an apparatus that can handle different bit rates without degrading the quality of the scene and have channel priority algorithms that can be easily updated.

Regarding claim 16, although not stated, the channel data could comprise HDTV data (Official Notice). Doing so would have been obvious in order to deliver better picture quality to a user.

Regarding claim 18, note the examiners rejection for claim 1, wherein the resolution is the complexity.

Regarding claim 19, note the examiners rejection for claim 1, wherein the highest resolution is the highest complexity.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:


US-2002/0001343	01-2002	Challapali et al.
US-5768594	06-1998	Blelloch et al.
US-6643327	11-2003	Wang, Limin
US-6298090	10-2001	Challapali et al.

US-6493388	12-2002	Wang, Limin
US-6151362	11-2000	Wang, Limin
US-6181742	01-2001	Rajagopalan et al.
US-5925092	07-1999	Swan et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dave Czekaj whose telephone number is (703) 305-3418. The examiner can normally be reached on Monday - Friday 9 hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Kelley can be reached on (703) 305-4856. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


CHRIS KELLEY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600